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ECONOMIC GROWTH AND THE CURRENT ACCOUNT IN LARGE COUNTRIES

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Abstract: This paper discusses current account movements of large countries in terms of an intertemporal model. It is shown that anticipated current income shock may lead to current account deficit for a large open economy. This might happen even when the economy is not immiserized. This outcome is never possible in 'small' economy type models which have been extensively discussed in the literature.

INTRODUCTION

In recent years considerable amount of research has been devoted towards modelling current account adjustments in terms of dynamic optimizing models. For example one may look at Sachs (1981), Svensson and Razin (1983). A brilliant survey of such models has been prepared by Bruce and Parvis (1985). In fact Bruce and Parvis (1985) while surveying the frontier have talked about the dearth of large country models in this context. Most of the models consider the trade structure of a 'small' open economy which faces given world prices and interest rate. This generally reduces the problem of the overall economy to that of a representative agent. One typical result then comes out as follows. If the small economy experiences a temporary increase in endowments, in order to smooth out its consumption, it must save in the current period, which in turn implies a current account surplus. However, the purpose of this paper is to show that this particular result is very much sensitive to the assumption of country size. It will be shown that in a two-country trading world a rise in real income may be associated with current account deficit. In particular following scenario will be considered.

Consider two economies trading in two goods and the inhabitants in each country living for two periods. Suppose one of the economies, all on a sudden experience a boom in its export production which is totally transitory in nature. This will tend to push down the terms of trade against the growing economy. This constitutes a real income gain for the other country. If the two countries have identical homothetic taste and preferences, country with a higher gain in real income will tend to have a current account surplus. This might imply that the

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growing economy will run a current account deficit, because its trading partner might gain more. Immiserizing growth and the 'small' economy type result stand as two extremes of this general result. If the growing country loses in terms of real income it must run a deficit. If the country is small, redistributive effect of endowment shock is zero since the terms of trade are held fixed. Therefore, the growing economy can never run a deficit. Now I proceed to develop the formal structure of the model.

MODEL

Suppose there are two countries home and foreign. Each is specialized in producing a single good but each consumes two goods. The goods are non-storable. The agents in each country live for two periods. For simplicity, following notation will be used:

H_i = Endowment of home export good in i th period $i=1,2$.

F_i = Endowment of foreign export good in i th period $i=1,2$.

C_{hi} = Home consumption of home export good in i th period $i=1,2$.

C_{hi}^* = Foreign consumption of home good in i th period $i=1,2$.

C_{fi} = Home consumption of the foreign good in the i th period $i=1,2$.

C_{fi}^* = Foreign consumption of the foreign good in the i th period $i=1,2$.

P_{hi} = Price of the home good in the i th period $i=1,2$.

P_{fi} = Price of the foreign good in the i th period $i=1,2$.

$Z_i = P_{hi}/P_{fi}$ = Terms of trade in the i th period, $i=1,2$.

r = rate of interest on bonds denominated in the units of import good of the home country.

There are essentially four goods in the model and there will be three relative prices to be determined. Since this is a pure exchange model, real income of each country will be a function of endowments and relative prices. Let Y_h and Y_f represents the real income of the home country and foreign country respectively.

MARKET EQUILIBRIUM CONDITIONS

$$C_{hi}(Z_1, Z_2, r, Y_h) + C_{hi}^*(Z_1, Z_2, r, Y_f) = H_i, \quad i=1,2, \quad (1)$$

$$C_{fi}(Z_1, Z_2, r, Y_h) + C_{fi}^*(Z_1, Z_2, r, Y_f) = F_i, \quad i=1,2, \quad (2)$$

$$Y_h = Y_h(Z_1, Z_2, r, H),$$

$$Y_f = Y_f(Z_1, Z_2, r, F).$$

Given the world budget constraint between two countries in each period. One of the equilibrium conditions is redundant. Therefore from (1) and (2) we can determine Z_1 , Z_2 , r with the help of three independent equations.

Now consider the intertemporal budget constraint of the home country

$$[Z_1(H_1 - C_{h1}) - C_{f1}](1+r) = Z_2 C_{h2} + C_{f2} - Z_2 H_2. \quad (3)$$

Let us call $Z_1(H_1 - C_{h1}) - C_{f1} = B_0$. Then (3) becomes

$$B_0(1+r) = (Z_2 C_{h2} + C_{f2}) - Z_2 H_2. \quad (3)$$

Let us assume that initial $B_0 = 0$ then from (3)

$$\frac{dB_0}{dH_1}(1+r) = \frac{dE_2}{dH_1} - \frac{d(Z_2 H_2)}{dH_1} \quad (4)$$

where $E_2 = Z_2 C_{h2} + C_{f2}$.

To find out the pattern of current account movement following an increase in H_1 , we shall make a simplifying assumption. Suppose the countries have identical tastes and preferences and the preferences are homothetic and separable overtime.

i.e. Let

$$\frac{C_{hi}}{C_{fi}} = \frac{C_{hi}^*}{C_{fi}^*} = f(Z_i) \quad (5)$$

(5) in equilibrium

$$\frac{H_i}{F_i} = f(Z_i) \quad \text{or} \quad Z_i = f^{-1}\left(\frac{H_i}{F_i}\right). \quad (6)$$

Since H_2 and F_2 are held fixed, Z_2 will be held fixed. Now

$$\frac{C_{h2}}{C_{f2}} = f(Z_2).$$

Or

$$C_{h2} = f(Z_2)C_{f2}.$$

Therefore,

$$E_2 = (Z_2 f(Z_2) + 1)C_{f2}$$

and

$$\frac{d(Z_2 H_2)}{dH_1} = 0$$

since Z_2, H_2 are fixed. Therefore from (4)

$$\text{Sign } \frac{dB_0}{dH_1} = \text{sign of } \frac{dE_2}{dH_1} = \text{sign of } \frac{dC_{f2}}{dH_1}$$

$$C_{f2} = C_{f2}(Z_1, Z_2, r, Y_h)$$

$$\frac{dC_{f2}}{dH_1} = S_{f2} + m_2 \frac{dY_h}{dH_1} \quad (7)$$

where

$$S_{f_2} = \frac{\partial C_{f_2}}{\partial Z_1} \cdot \frac{dZ_1}{dH_1} + \frac{\partial C_{f_2}}{\partial Z_2} \cdot \frac{dZ_2}{dH_1} + \frac{\partial C_{f_2}}{\partial r} \cdot \frac{dr}{dH_1}$$

and

$$m_2 = \frac{\partial C_{f_2}}{\partial Y_h}.$$

Consider the following equilibrium condition

$$C_{f_2} + C_{f_2}^* = F_2$$

or

$$\frac{dC_{f_2}}{dH_1} + \frac{dC_{f_2}^*}{dH_1} = 0$$

or

$$S_{f_2} + S_{f_2}^* + m_2 \left[\frac{dY_h}{dH_1} + \frac{dY_f}{dH_1} \right] = 0. \quad (8)$$

Since tastes are identical m_2 is the same for both but S_{f_2} may not be equal to $S_{f_2}^*$ because of different country-sizes. In general, however, one may write

$$S_{f_2}^* = \lambda S_{f_2}$$

where λ satisfies $Y_f = \lambda Y_h$. Then (8) should be

$$S_{f_2} = -\frac{1}{1+\lambda} m_2 \left(\frac{dY_h}{dH_1} + \frac{dY_f}{dH_1} \right). \quad (8)$$

And we have

$$\frac{dC_{f_2}}{dH_1} = \frac{\lambda m_2}{1+\lambda} \left(\frac{dY_h}{dH_1} - \frac{1}{\lambda} \frac{dY_f}{dH_1} \right). \quad (9)$$

Thus

$$\frac{dB_0}{dH_1} \cong 0 \quad \text{iff} \quad \frac{dY_h}{dH_1} \cong \frac{1}{\lambda} \cdot \frac{dY_f}{dH_1}.$$

If the sizes of two countries are roughly similar, so that $\lambda = 1$, current account will go in surplus iff the home country gains more relative to the foreign country. If the home country is 'small' then $\lambda \rightarrow \alpha$ and the usual result automatically holds. In general dY_h/dH_1 and dY_f/dH_1 both should be positive. There is no a prior presumption as to which country will gain more. If the home country is immiserized $dY_h/dH_1 < 0$ and the current account will go into deficit.

CONCLUSION

In a simple intertemporal model it has been shown that a large country may experience capital inflow following temporary, current boom in export production. This occurs even when the country is not worse off in terms of real income. The model deals with two countries very similar in structure and therefore does not claim to capture all facts regarding the current account movements of economies very dissimilar in nature. However, it points out that since largeness of countries is often reality, some results of 'small' open economy are not easily applicable. The intuition behind the result is simple to understand. Increase in H_1 leads to a fall in the terms of trade. Consider the decline which is just enough to outweigh the initial effect of the boom. This increases the income of the foreign country. It tends to smooth out. Given that the substitution effects are symmetric, this must mean that the foreign country has to run a surplus. It is a zero sum world. Therefore, the home country must run a deficit. Now even if we let a small increase in the real income of the home country same result should go through. Following the same argument it can be easily shown that anticipated future increase in endowment i.e. an increase in H_2 may lead to current account surplus quite contrary to the usual result.

Many underdeveloped countries often face inelastic demand for their exports. For these economies export boom tends to reduce the relative prices of their export good to a large extent. It seems that the result of the paper can be properly extended to highlight the balance of payments problem of those countries.

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